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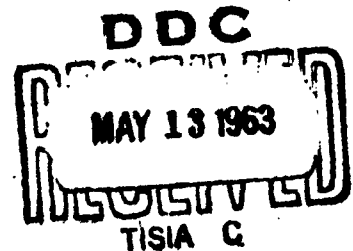
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USSR Industrial Development
SOVIET TRACTORS AND AGRICULTURAL MACHINERY

No. 59

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USSR Industrial Development

SOVIET TRACTORS AND AGRICULTURAL MACHINERY

No. 59

This serial publication contains translations of selected articles on tractors and agricultural machinery in the Soviet Union, on the specific subjects indicated in the table of contents. Complete bibliographic information accompanies each article.

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NEW LONG-DISTANCE COTTON HAULING TRANSPORT VEHICLES

(Motor Transport for Cotton)

Following is the translation of an article by V. Shabert, non-staff correspondent of Pravda Vostoka in the Russian language publication Pravda Vostoka (Truth of the East), Tashkent, 12 January 1963, page 1.]

A new experimental set of machines for the transportation of loose raw materials for long distances is being built at the Tashavtomash Plant.

The new machine differs basically from the previous GAZ-707 models of cotton transporters and has a number of advantages. Its load capacity is 50 percent greater. On a common frame there are two self unloading bodies which can be dumped in different directions, they are separated one from another. Each body has a load raiser of a new design controlled from the driver's cab.

The overall length of the machine (the truck tractor and the semi-trailer) is in excess of 11 meters, it is a true vehicle train. The cotton transporter can develop speed of up to 80 kilometers per hour. The screen sides are built out of stamped stretched net, and all the parts from profile rolled iron, this reduces sharply the cost of the transporter and of labor expenditure in their production.

The new machine was developed by the plant designers under the

Direction of Chief Designer Ya. B. Belag.

Currently, the new transporters are undergoing tests. In the fifth year of the Seven Year Plan, the plant will commence their series production.

10,148

CSO: 1630-S

ACCELERATION OF MACHINE BUILDING FOR FULL

MECHANIZATION OF BEET CULTIVATION & HARVESTING

(To Speed Machine Output for the Svetlichnyy Complex)

[Following is the translation of an unsigned article in the Russian language publication Sel'skaya Zhizn' (Country Life) Moscow, 7 February 1963, page 1.]

The domestic beet growers are taking an important step this year, they are to grow an excellent beet crop on hundreds of thousands of hectares without the use of manual labor. The experiments of Zveno of Hero of the Socialist Labor, the Kuban' engineer V. A. Svetlichnyy and many other famous authorities on beet growing proved conclusively, that such a project is completely feasible. A course must be undertaken for complete mechanization and for new, more improved technology of production of sugar beets. Svetlichnyy and his comrades, as it is well known, used many new machines and equipment in their fields. They were single design experimental models produced for the state tests. Having passed the tests these machines together with those that are already mass produced, have composed a complex of machines for the cultivation and harvesting of beets. They are known under the name of Svetlichnyy Complex. The industry received an order to produce the new equipment.

Following is the list of plants charged with building the machines to complete the Svetlichnyy Complex:

The production plan for 1963
(in thousands of units by quarters)

	Total	I	II	III
<u>SKRN-12B Planters with water filled</u> rollers, produced by Kirovograd Krasnaya Zvezda Plant, Pridneprov- skiy Sovnarkhoz (Director A. P. Kryuchkov)	9	2.1	2.1	2.4
<u>2STSN-6 Precision Planter. Built by</u> the same plant as above	1	0.3	0.7	--
<u>2KRN-2.8M Cultivators as unit with</u> hoes, harrows and fertilizer acces- sories, built by Ryazsel'mash Plant of Moscow city Sovnarkhoz (Director P. M. Kiselev)	9.9	4	4.5	1.4
<u>KRU-5.4 Cultivators built by same</u> plant as above.	12.4	-	-	4.4
<u>PSN-6 Thinners built by Krasnyy</u> Aksay Plant of Severo-Kavkazskiy Sovnarkhoz (Director A. F. Romashev)	0.1	0.05	0.05	-
<u>GAN-8 Ammoniac Herbicide Machines,</u> built by L'vovsel'mash Plant, L'vovskiy Sovnarkhoz (Director I. A. Kalinichenko)	6	1.5	1.5	1.5
<u>KS-3 Beet Harvesting Combines built by</u>				

Dnepropetrovsk Agricultural Machine

Building Plant, Pridneprovskiy Sovnarkhoz

(Director B. I. Luk'yanov) 4 1 1 1

SEN-2M Beet Harvesting Combines built

by Kurgansel'mash Plant of Yuzhno-

Ural'skiy Sovnarkhoz (Director A. P.

Stroganov) 3 - - 1

SNT-2.1 Beet Loaders built by Frunzesel'-

mash Plant of the Kirgiz Sovnarkhoz

(Director A. Z. Kunysh) 6 - 0.5 2.5

February is here. Little time remains before the beginning of spring work in the southern zones of the country. The tractor and the agricultural machine building plants must start, without delay, the production of machines for the Svetlichnyy Complex. However, it appears that a number of enterprises have not started their assigned production, and in some instances, the orders for the new machines have not even been placed with the plants.

The engineers of the Svetlichnyy Zveno successfully used the new GRS-50 Beet Loader-Cleaner. Last year it passed state tests and has a number of unquestionable advantages. The first one is the cleaning arrangement of the GRS-50 which in comparison with old model SNT-2.1 Beet Loader eliminates the necessity for the additional manual beet cleaning. It has a hydraulic raking attachment which permits utilization of this loader during any time of the year. It can be used for

unloading trucks and tractor trailers.

According to the data of the machine testing stations the use of the GNS-50 Loader-Cleaners will effect an economy of up to 40 man hours per hectare where the crop is about 250 cent. There are several thousand orders for these loaders. Yet, even though the Sel'khoztekhnika was insisting on initiation of their production in 1962, they are still not in production and no plant was designated to build them.

Or take for example, the PSN-6 Row Thinner, it has an important place in the Svetlichnyy Complex for the full mechanization of the plant cultivation. They are planned in insignificant numbers for 1963, just 100 for the whole USSR!

The Screen Harrow-Scraper Designed for thinning shoots of single seed beets, planted by the precision planters, are also produced in very insufficient numbers. Just the April Metal Products Plant of the Moscow Oblast must double their production of the screen harrows.

Two beet harvesting machines are included into the Svetlichnyy Complex, the KS-3 Combine of the puller type or the SKN-2M Combine of cutting stems at the root type. Svetlichnyy prefers the later type as a new, more progressive machine. According to the test data, the SKN-2M extracts a larger percentage of beets than the KS-3 combine that are suitable for delivery to the processing plant.

Is it not clear that the start of production of this machine should be expedited? And just what is taking place? The KS-3 and SKN-3G

Combines are built by the Dnepropetrovsk Agricultural Machine Building Plant which has long specialized in the production of these machines. Yet the new SKN-2M Combine production was assigned to the Kurgansel'mash Plant which builds excavators and never produced any beet combines.

The machines and equipment for the Svetlichnyy Complex must be provided by the Khar'kov and Minsk Tractor Plants and many other enterprises. In all this there should be strict planning and precise control. It is granted that we shall have a fully adequate supply of cultivators and planters for precision seeding, but by the beginning of spring we will not have at our disposal say, the needed number of screen harrows for thinning sprouts. This immediately breaks down the complex, the technological succession of operations will be interrupted. That is why strict coordination of the plants' production and timely deliveries of equipment to the users are essential.

In the Report to the XXII Party Congress, N. S. Khrushchev underscored the necessity for: "Guarantee to all kolkhozes and sovkhoses complexes of machines commensurate with advance technology of agricultural production in a minimum of time."

In the fifth year of the Seven Year Plan the new technology must attain the broadest application on our fields. This will open great possibilities for further growth of the production, reduction of expenditures and lowering of the cost of products.

10,148

CSO: 1830-S

TRACTOR AND AGRICULTURAL MACHINE BUILDING

IN 1963

[Following is the translation of an article by I. N. Yes'kov, Engineer, in a Russian Language publication Traktory i Sel'khoz mashiny (Tractors and Agricultural Machines), Moscow No. 1 January 1963, page 1-2.]

1963, the fifth year of the Seven-Year Plan-- The Soviet people accomplished a great deal toward the successful fulfillment of the Plan.

The agricultural workers of the Soviet Union labored notably in 1962 and in spite of unfavorable climatic conditions that inconveniently developed in many regions, managed to store 270,000,000 more pods of grain in 1962 than in 1961.

The Party and the Government are devoting great attention to the agriculture. From year to year the agricultural engineers are receiving in greater quantities the tractors, transportation means and the agricultural machines.

The Plenums of TsK KPSS in 1959, 1960 and 1961 pointed to the necessity of intensification of the pace of supplying the kolkhozes and sovkhoses with equipment for full mechanization in all the branches of the agricultural production in order to assure uninterrupted technical progress in the mechanization and electrification of agriculture, since [it is only on this basis that it will be possible to raise the general

level of soil cultivation, to attain the growth of labor productivity and the reduce of cost of the agricultural products.

The men and women workers, the engineers and technicians of the tractor and agricultural machine building enterprises accomplished a lot to supply the kolkhozes and sovkhozes with tractors and machinery in great quantities, these machines are more improved and productive.

During the four years of the Seven-Year Plan there were as many tractors built and turned over to the agriculture as in the six year period prior to the Seven-Year Plan.

In 1962 the kolkhozes and sovkhozes received almost thrice more tractors than in 1953, and the agricultural tractor parks have 500,000 more tractors in 1962 than they had in 1953.

The volume of production of the agricultural machinery during this time rose four fold. During the last three years the annual tractor production growth was approximately 11 percent.

In 1962 the production of the agricultural machines increased in comparison with 1961, by more than 17 percent; the production of machines for the cultivation and harvesting of corn, grain and for ensilage rose 46 percent, and of the corn harvesting combines, 106 percent; the production of cultivation machines and harvesting combines for sugar beets rose 48 percent, that of the planters, 197 percent; bean harvesting machines, 13 fold; for cotton picking machines by 49 percent; machines for grain crops, 12 percent and machines for the labor as animal husbandry processes, 14 percent.

In 1962 the collectives of Rostsel'mash and Taganrog Combine Plants converted to the manufacture of more productive selfpropelled (SK-4) combines and built more than 60,000 of them. The Collective of the Tula Combine Plant built 4,000 ten-meter operating-width reapers. The tractor builders of the Minsk and Khar'kov Tractor Plants and the collectives of Krasnaya Zvezda, Krasnyy Aksay Plants the Dnepropetrovsk Agricultural Machine Building Plant and other enterprises provided 1450 kolkhozes and sovkhoses, by the commencement of the field work with tractors, Planters for dotted seeding, cultivators, beet combines, screen harrows and other machines for the dissemination of the experiences of engineer Comrade Svetlichnyy in the cultivation of sugar beets without manual labor.

Further growth of tractor production is envisioned by the plan. During this year 52 percent more tractors will be built than in 1959, the first year of the Seven-Year Plan. A more extensive growth is planned at the Lipetsk Plant (55 percent) and at the Minsk Plant (27 percent) in addition, the Minsk Plant will organize production of MTZ-50 tractor which is a new model. A great volume of work must be carried out by the Volgograd tractor builders. This plant must convert to mass production of a new model D-75 crawler tractor of three ton class whose design advantageously distinguishes it from the design of other tractors of this class that are being currently built (DT-54A, T-74).

The Collective of the Kishinev Tractor Assembly Plant must resolve a difficult problem, they must accomplish a design and technological

development of a two-ton crawler tractor for operation in vineyards, to organize series production and assure the release of a large group of these tractors in 1963. The success depends in a large measure on the timely supply of parts and components by Khar'kov, Lipetsk, Minsk and other cooperating tractor plants.

The tractor production has increased considerably, particularly at the Lipetsk and Minsk Tractor Plants due to improvement of labor productivity, better equipment utilization increase of changeover coefficient, and the further development of capacity and specialization of tractor plants. For example, in 1963 the production of engines will be discontinued at the Volgograd and Minsk Tractor Plants, and will be organized at specialized engine building plants. Their production will considerably increase at the Khar'kov and the newly being built Minsk Engine Building Plants.

In 1963 the production of agricultural machines will increase by more than 20 percent. During the five years of the Seven-Year Plan 47 percent more agricultural machines will be produced than was estimated for these years in the control figures of the Seven-Year Plan. In 1963 particular attention will be devoted to the corn, sugar beet, and bean cultivation machinery and the machinery for labor mechanization in animal husbandry.

The production of basic groups of agricultural machines will increase in the production of ensilage harvesting combines by 64 percent, and bean crop reapers by 28 percent.

There will be substantial increase in the production of row reapers and particularly of the wide operating width planters, tractor plows, wind erosion soil preservation machines and others.

Thus, for example, the production of wide operating-width row reapers will increase by 29 percent and that of grain planters by 40 percent.

The 1963 Plan calls for the production of 90 different new or modernized agricultural machines, among them grain combines with straw choppers in the process of harvesting, they will be of 40 m³ capacity and with automatic couplings (the straw processing will reduce the labor expenditure 40 percent in comparison with processing with buckrakes); the two row KSR-2 ensilage combines assuring ensilage of tall stem corn (the apparatus of this combine in comparison with the SK-2.6, chops straw considerably finer; with the removal of an attachment the combine can be converted to a single row operation); the two row beet harvesting combines which cut the plants at the roots and gather them into hoppers the milking installations equipped with glass milk conductors, cooling installations, containers for milk preservation, reserve electric stations, steam kettles and other essential units; complexes of equipment for grain cleaning and grain cleaning-drying points; planters for dotted corn planting with between the row spaces of 70, 90, 105 or 140 cm.

In recent years the pace of the growth of tractor and agricultural machine production has outstripped the pace of the growth of

production in other branches of the machine building. The government is investing considerable capital and material resources into the development of the tractor and agricultural machinery production. The tractor and agricultural machinery parks grow from year to year within the kolkhozes and sovkhoses. In 1963 they will grow particularly in a matter of machines for the cultivation of corn, sugar beets, beans and for labor mechanization in animal husbandry; however, the machine production is still inadequate and does not allow performance of the field work in the tight agrotechnical time limits.

For the fulfillment of the directions of the March 1962 Plenum of TsK KPSS on completion of the full mechanization of all the branches of agricultural production of tractor and agricultural machine building along with the 1963 fulfillment of intensified tasks of tractor, agricultural machines and spare parts production, it is essential to concentrate the capital investment on starting new projects, first of all on the construction of casting and forging shops. Currently, the coefficient of change over at the tractor and agricultural machine building plants is considerably higher than in the other branches of machine building.

In 1963 the coefficient of change over will be further increased. For the production growth of tractors, plows, planters, cultivators, grain, potato and beet harvesting combines, disc harrows, machines for labor mechanization in animal husbandry, machines for the vineyard and vegetable cultivation, and other agricultural machines, unrelaxing

daily attention and the development of additional capacities is required.

More exacting and coordinated enterprise operations are needed for the fulfillment of the 1963 plan. Work stoppages at the enterprises due to breakdown of materials delivery and of the complementing products as has happened in 1962 cannot be tolerated. For example, the Belinsk-sel'mash Plant failed to fulfill the production plan for planters for several months, it was due to the lack of disc steel which was to be supplied by the Novosibirsk Metallurgical Plant; the Gomsel'mash Plant had work stoppage due to irregular delivery by the enterprises of the Ul'yanskiy Sovnarkhoz of roller-bushing chains and forgings by the Tula Combine plant. The Krasnoyarsk Combine plant made irregular deliveries of parts for the wide operating width reaper to the Kazakhsel'mash Plant. The Novosibirskiy Sovnarkhoz failed to meet its commitments for shallow plow planters critically needed within the regions of the Tselinnyy Kray; incidentally, this supply breakdown was stretched over a period of two years.

From the earliest days of 1963 the enterprises must operate with precision and coordination. The plans and graphs of supply must become laws. The efforts of the production collectives must be directed on the improvement of the quality of products, reduction of their cost, the increase of the labor productivity and the remunerativeness of the enterprise operations.

In 1963, it is also essential to seriously undertake the task of the reduction of the multitude of models of the agricultural machines. The large number of models creates great difficulties in the production, requires a large quantity of equipment, time and production conversion, the parts lists of the purchased products and assortment of materials is increased and considerable difficulties develop in the operation and repair of the machines and the assurance for the supply of spare parts. For example, why is it necessary to produce mowers-choppers of several designs? The KIP-1.4, KIR-1.5 and UBD-3 models of mowers-choppers are designed for one and the same purpose, to mow and chop the stems of potatoes, beets, grass, corn and other crops; they differ little from each other in matters of operating width, productivity and regulation of cutting height, they have analogous operating organs.

Currently, four plants produce the mowers-choppers. It is possible and necessary to reduce the production of mowers-choppers to one model and build them in adequate quantities at one plant.

In 1963 there will be five models of six modifications of beet planters (2SSN-6, 3SSN-6, SKRN-12, 25TN-6, SSN-6B and SNSN-6); all these planters are built by the Krasnaya Zvezda Plant, while no more than two models 3-4 modifications are required by the agriculture. It is evident that there is no need for 30 models of tractor plows and 29 models of tractor cultivators. It is presumed that in conformance with the decisions of the November (1962) Plenum of the CPSU the State Committee of the Council of Ministers USSR on Automation and Machine Building to whom

The leading scientific, planning and design institutes and the plant design bureaus were transferred will insure the specialization of the scientific research, planning and design organizations and the development of specific types of tractors and agricultural machines with maximum standardization of components and parts. The All-Union Federation of the Council of Ministers USSR Soyuzsel'khoztekhnika will introduce into agricultural production better machines in 1963.

The measures approved by the TsK KPSS Plenum on the reorganization of the party direction of the state economy and the adopted decisions in the area of economic direction of industry, building and planning, and in the area of the party-state control will improve the state discipline. The shortcomings in material guarantees and cooperative deliveries will be removed.

10,148

CSO: 1830-S

T-120 TRUCK-TRACTOR

(New Tractor of the Omega Tractor Plant)

[Following is the translation of selected portions of an article by A. Podkovyrin, Engineer, Omega Tractor Plant, in a Russian language publication Traktory i Sel'khoz mashiny (Tractors and Agricultural Machines) No. 1, Moscow, 1963 pages 3-4.]

The designers' collective of the Omega Tractor Plant designed and the plant built a powerful wheeled T-120 truck-tractor, the experimental model is undergoing tests.

The truck-tractor [Comment: The picture of the machine is not reproduced.] is composed of two sectional chassis connected by a knuckle joint. The engine, cab, transmission box and hand brake are installed on the front section. The basic and auxiliary hoists can turn in relation to the rear section both in horizontal and vertical planes.

This method of frame connection of the front and rear chassis sections which is presently termed as "breaking" frames has great advantages; in overcoming obstacles to any wheel the frame does not experience any torsion, all the wheels remain in contact with the ground and the vehicle turning radius is considerably less than that of the usual trucks.

The truck tractor turning is accomplished with the aid of two hydraulic cylinders.

On the frame of the rear chassis of the truck-tractor is a conic frame on which the loading platform is installed for lumber hauling or a body for transport of loose material loads.

Specifications

Type	Wheel, 4x4
Weight in operational condition with conic frame in tons	24
Load capacity with trailer in tons	40
Dimensions in mm	
length	8080
width	3200
cab height without tire sag [presadka]	4050
Distance between axles in mm	4000
Cross base in mm	2450
Clearance without tire sag	900
Number of speeds	
Forward (Within the limits of 2.79 - 31.8 km/hr)	6
Reverse (2.6-7.27 km/hr)	3
Engine model	2D12 GSM
Nominal power in hp	300
Maximum torsion moment in kgm	154
Number of cylinders	12

In June - July 1962 the T-210 wheel truck tractor underwent production tests during construction of a gas main in Bukhar-Ural and in

THE Kara-Kum Desert.

In transport of pipe sections, the load was composed of four sections which the truck tractor transported on a dirt road at a speed corresponding to the speeds of KrAZ-214 Trucks hauling 2 sections (the pipe length is 36 m, diameter 1020 mm, and weight 11 tons.)

In transporting two pipe sections in the sands of the Kara-Kum Desert the truck tractor's average speed was about 7 km/hr while the average speed of the 100 tractor hauling one section under the same conditions did not exceed 5 km/hr.

At the present time the T-210 wheel truck tractor is ready for the final stages of the production tests.

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CSO: 1830-S

SZP-47 PRESS-TYPE GRAIN-GRASS DRILL

[Following is the translation of selected portions of an article by Ya. Z. Novichenko and Ye.V. Kossov, engineers, in the Russian language publication Traktory i Sel'khoz mashiny (Tractors and Agricultural Machines) No. 1, Moscow, 1963, pages 29-30.]

The Design Bureau of Krasnaya Zvezda Plant designed and developed the SZP-47 tractor-drawn press-type grain-grass drill. [Comment: Picture of the drill is not reproduced here.]

A number of components, parts and operating organs were standardized to conform to the already produced grain and grain-grass mounted drills and incorporated in the SZP-47 design. A mechanism with hydro-cylinder is installed on the drill which allows tractor driver to operate the drill from his seat.

The SZP-47 drill has the usual working organs, 24 rollers situated front and rear. The drill components are assembled in a manner calculated to transfer maximum of the weight of the drill to the rollers which press the seeded rows.

The drill is designed for seeding grain crops, grass and grass mixtures with simultaneous rolling of the seeded rows.

Both Tselinnyy Kray and Far Eastern Machine Testing Stations,

where the state tests of the SZP-47 drill were conducted found that the use of this drill in agriculture will be practical and recommended production of experimental sets, after elimination of the defects found during the tests.

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CSO: 1830-S

PSTM-2.0 ORCHARD TRACTOR SEMI-TRAILER

[Following is the translation of selected portion of an article by B. I. Otdel'nov, engineer of NIZI Orchard Cultivation in Nechernozemnaya Polosa in a Russian language publication Traktory i Sel'khoz mashiny (Tractors and Agricultural Machines) No. 1, Moscow, January, 1963 page 32.]

The Department of Mechanization of Scientific Research Zonal Institute of Orchard Cultivation in the Nechernozemnaya Polosa jointly with the GKB on Mechanization of Truck Farming Labor of Moscow Oblast Sovnarkhoz, designed and developed the PSTM-2.0 semitrailer for the transportation of fruit, vegetables and other cargo. The experimental models of the semitrailers were built in the experimental shop of the Mossel'mash Plant. After state tests the PSTM-2.0 was recommended for the series production.

The necessity for the development of the PSTM-2.0 semitrailer was conditioned by the absence of trailers or semitrailers meeting agro-technical requirements, presented by the problems of fruit and vegetable transportation.

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CSO: 1830-S

TKU-0.9 UNIVERSAL TRENCH DIGGER

[Following is the translation of selected portions of an article by V.F. Kireyev Central Chernozem MIS in the Russian language publication Traktory i Sel'khoz mashiny (Tractors and Agricultural Machines) No. 1, Moscow, January 1963 pages 34-35.]

The Ukrainian NIISKhom developed the TKU-0.9 Universal Trench Digger, for digging trenches, uncovering trenches, and removal of mother beet seeds from the trenches. [Comment: Picture of the trench digger not reproduced.]

The TKU-0.9 Trench Digger can replace the bulky, expensive UKAP-Ts INS installation mounted on ZIL-157 chassis, which does not have the accessories for the removal of root vegetables from the trench and is used not more than two months of the year.

The Central Chernozem MIS recommended production of experimental set (100-150 machines) of the TKU-0.9 Universal Trench Diggers for large scale proving under field conditions.